

Living with Ovarian Tumour & Consequences

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ABSTRACT

Ovarian cancer is challenging to treat, as recurrence is common, even after initial treatment, though complete cure is possible for some, especially in early stages. Treatment usually involves surgery & chemotherapy, and while many achieve remission, recurrence can occur.

Ovarian cancer has emerged as one of the most common malignancies affecting women in India and has shown an increase in the incidence rates over the years, as compared to cervical cancer and breast Cancers which are on a declining trend! In India, ovarian cancer is the third most common gynaecological cancer, following breast and cervical cancer, based on data from population-based cancer registries.

Ovarian cancer is often difficult to detect because symptoms often don't develop until later stages. Many women present with suspicious adnexal masses in an oncologist's practice. Gynaecologist in India besides a pelvic exam, with gloved fingers into the vagina and simultaneously pressing a hand on the abdomen to the pelvic organs, they also visually examine the external genitalia, vagina and cervix. The confirmation of diagnosis is based on the radiological imaging, and tumour markers. Some patients may undergo biopsy or fine-needle aspiration cytology (FNAC) from the adnexal mass for a confirmation of the diagnosis.

Indian women face well the Ovarian cancers as survival for all stages of ovarian cancer as more than 70% survive their cancer for 1 year after diagnosis, about 45% survive for 5 years or more and 35% survive for 10 years or more.

Materials and Methods: This case-based review is the result of following closely a case of friend's wife for last year's Primary total hysterectomy followed by 6 sessions of chemotherapy, review and additional 3 sessions followed by remission for 6 months and Pleural effusion managed in USA, another Pleural and Abdominal tapping of the fluid and another abdominal fluid tapping followed by third time 6 sessions of milder targeted chemotherapy.

Outcome: Despite multiple recurrences, chemotherapy, hospitalization for nearly 100 days in last 2 years, the lady is leading almost normal life for 2 months.

Aim in OC Management: A steady increase has been observed in the incidence of ovarian cancer in several registries. A significant goal in managing ovarian cancer is to develop an effective test to detect the disease at its earlier stages, standard management with surgeries and chemotherapy, and managing recurrences resulting in reduced mortality.

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Introduction

Gynaecological cancers are among the most common cancers in women and hence an important public health issue. Due to the lack of cancer awareness, variable pathology, and dearth of proper screening facilities in developing countries such as India, most women report at advanced stages, adversely affecting the prognosis and clinical outcomes. Ovarian cancer has emerged as one of the most common malignancies affecting women in India and has shown an increase in the incidence rates over the years, as compared to cervical cancer and breast Cancers which are on a declining trend! In India, ovarian cancer is the third most common gynaecological cancer, following breast and cervical cancer [1, 2]. Ovarian cancer is often difficult to detect because

symptoms often don't develop until later stages. The ovarian cancer is differentiated in four stages, namely: Stage I: Cancer is confined to one or both ovaries. Stage II: Cancer has spread to the uterus or other nearby organs. Stage III: Cancer has spread to the lymph nodes or abdominal lining. Stage IV: Cancer has spread to distant organs, such as the lungs or liver.

During a 7-year duration (2010–2016), 6,515 cancer patients were recorded at PBCR, and 228 cases were of ovarian malignancy. It was observed that most of the cases in this study were in 41–50 years of life. The age-standardized incidence rate of ovarian cancers in the that study was 4.61 per 100,000, and the crude incidence rate was 5.08 per 100,000. The crude mortality rate and age-standardized mortality rate of ovarian cancer were 2.3 and 2.02 per 100,000, respectively. Serous carcinoma is the most common histological subtype (43.75%), followed by mucinous carcinoma.

Healthcare providers treat ovarian cancer with surgery, chemotherapy and other cancer treatments. Surgery alone can cure some women with early-stage ovarian cancer (OC) that hasn't spread beyond the ovaries, but identifying at early stage is the challenge! For advanced cancer, or OC with secondaries surgery aims to debulking means removing as much of the cancer as possible, followed by chemotherapy. In chemotherapy platinum-based chemotherapy drugs (like cisplatin or carboplatin) are used, sometimes in combination with other drugs. OC is notoriously known for recurrence as in many cases, it returns, even after initial treatment. Additional surgery and chemotherapy are the options to treat recurrent ovarian cancer. PARP inhibitors and other targeted therapies are showing promise in treating ovarian cancer, particularly in preventing recurrence. For advanced ovarian cancer that cannot be cured, treatment focuses on managing symptoms and improving quality of life known as Palliative Care. Of late Immunotherapy, which helps the body's immune system fight cancer, is also being explored as a treatment option.

Indian women face well the Ovarian cancers as survival for all stages of ovarian cancer more than 70% survive their cancer for 1 year after diagnosis. About 45% survive for 5 years or more and 35% will survive their cancer for 10 years or more.

This article is a result of a close follow-up of friend's wife with OC since April 2023, with multiple recurrences, currently doing well after, tapping twice each of pleural effusion and abdominal fluids, 15 sessions of chemotherapy in 3 trenches and Occult blood and recent Sever Hypotension in February 2025.

Case Report

Ms Prabha as 65-year-old lady started complaints of lack of appetite, abdominal discomfort and back in early in April 2023. After routine check-up in a private hospital and treatment with anti-helminthics and anti-parasitic (amoebic and Giardiasis) and a course of antibiotics over a period of 4 week, that gave an 80% relief but recurred similar symptoms in next 2 weeks. This time a gastro-electrologist was consulted and an endoscopy & scanning showed nothing of concern GI system. A scanning of the Pelvis & abdomen showed a hazy shadow in left ovary, and Fine Needle Aspiration Cytology (FNAC), confirmed Ovarian cancer stage 3.

The diagnosis led to a total hysterectomy with bilateral salpingo-oophorectomy (TAH-BSO), which involved removing the uterus (hysterectomy), both fallopian tubes (salpingectomy), and both ovaries (oophorectomy) and 6 sessions of Chemotherapy. Chemotherapy included Carboplatin: A platinum-based chemotherapy drug plus Paclitaxel: A taxane chemotherapy drug administered intravenously (IV) every 3 weeks. After 6 session she was assessed and another 3 sessions were given, by the end of which she was declared cancer free and advised a checkup after 6 months. This combination of Carboplatin and Paclitaxel showed high response with better toleration.

In September 2023 the couple went to USA to be with their daughters. However just a month before their return she was breathless and local emergency consultation led to identification of Pleural effusion, and tapping of 1.5 litre of fluid for immediate relief. On return they consulted their regular oncologist and found not only pleural effusion but also ascites. This time half a litre of pleural effusion and 2 litres of abdominal fluid (Ascites) were tapped and another course of 6 sessions of chemotherapy- PARP inhibitor - Olaparib, was given which she tolerated well. After 3 more months she needed another abdominal paracentesis to

withdraw 1litre of fluid. Until October 2024 she was almost normal with improved appetite and general weakness and was coming for regular walks.

In December they went to a trip for sightseeing, where on morning she had epigastric pain, nausea, vomiting, melena (black coloured stool) and fainted in toilet. After a primary care she was rushed to Bengaluru. She was admitted an intensive care unit managed with blood transfusion and IV fluids and recovered in 5 days. Gastric metastasis from ovarian cancer is unusual, had appeared 18 months after its initial diagnosis, though it is known occur even after years. In third week of February 2025, she suddenly had low BP and fell. Another stint of hospitalization, a serious alert to get the daughter from USA ended in recouping of BP and anormal stable life in a week's time. As on reporting 15 March she is leading a normal life though feels bit weak.

This is a typical case of Ovarian Cancer with recurrences especially when diagnosed late.

Discussions

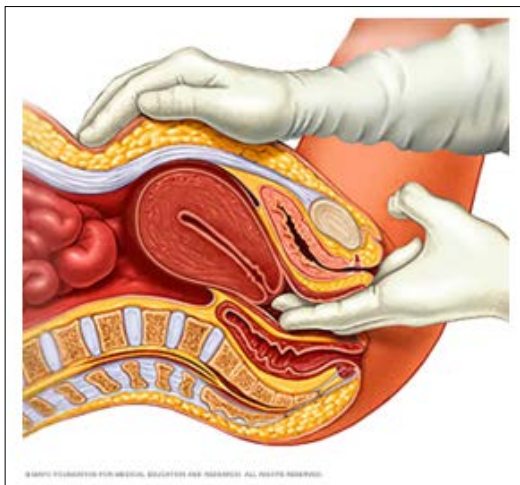
In 2022, India reported 47,333 new ovarian cancer cases and 32,978 deaths, with ovarian cancer being the most lethal gynaecological malignancy and often called a "silent killer" due to its subtle, often misdiagnosed symptoms. The exact cause of ovarian cancer is yet unknown, but factors like genetic mutations of genes, one of them being breast cancer gene 1 (BRCA1) or breast cancer gene 2 (BRCA2).

Ovarian Cancer however much scaring it is, it is easy to overlook the early symptoms of ovarian cancer because they are nonspecific, although recurrent. As the disease whispers by way of early symptoms such as abdominal bloating and pain, abnormal fullness after eating, difficulty in eating, an increased urge to urinate, fatigue, indigestion, and constipation, family physicians/Obstetricians must listen carefully for early diagnosis. The symptoms are often persistent and become more severe as the disease progresses. As ovaries are situated deep within the pelvic cavity, it is unlikely for the woman to appreciate the mass until it spreads to the abdominal cavity. Unfortunately, there is no routine diagnostic screening test available for ovarian cancer. Hence, women must be counselled in every contact to report unusual or persistent symptoms.

Everyone is born with Breast Cancer Susceptibility gene (BRCA), genes. These are tumour suppressor genes that work to suppress carcinogenesis. Healthy BRCA genes produce tumour suppression proteins which help repair damaged DNA and cell stability, thereby preventing tumour development. When these genes are mutated, their normal function is altered and not be able to fix DNA damage nor suppress tumour development, leading to a risk of cancer. For women with suspected ovarian cancer, testing must happen as early as diagnosis or during surgery. If she tests positive for a BRCA mutation, making treatment decisions earlier to stop cancer from progressing or recurring, is possible though, it is never too late to get BRCA tested.

A study of 957 ovarian neoplasms showed that most of the benign tumours occurred between 20 and 40 years of age, while the malignant lesions presented commonly between 41 and 50 years of age. The most common benign tumours were serous cystadenoma (30%), followed by mature teratoma (16%) and mucinous cystadenoma (11%). Serous Cystadenocarcinoma is the predominant malignant tumour (11.3%) and 49.5% them were

bilateral. Borderline serous tumours showed bilateral involvement more commonly (27.4%) than borderline mucinous tumours (15.7%). Most of the malignant tumours presented as Stage III (60%) or Stage II (20%) disease. The OS rate was 85% for Stage I tumours, 65% for Stage II, 30% for Stage III, and 15.5% for Stage IV tumours [3].



Many women present with suspicious adnexal masses in an oncologist's practice. Gynaecologists first do a pelvic examination wherein doctor inserts gloved fingers into the vagina and simultaneously presses a hand on the abdomen to feel pelvic organs. The doctor also visually examines your external genitalia, vagina and cervix. Further confirmation of diagnosis is based on the radiological imaging, and tumour markers. Imaging tests such as X Ray ultrasound or CT scans of the abdomen and pelvis, help determine the size, shape and structure of your ovaries. Some patients may undergo biopsy or fine-needle aspiration cytology (FNAC) from the adnexal mass for a confirmation of the diagnosis. FNAC is a minimally invasive procedure used to obtain a tissue sample from a lump or mass for microscopic examination, helping determine if it's benign or malignant. Preoperative FNAC has been found to have a sensitivity for a diagnosis of malignancy of 85.7%, specificity of 98.0%, positive predictive value of 97.7%, negative predictive value of 87.7%, and accuracy of 92.0%.[3] Intraoperative frozen section has been used in the diagnosis of ovarian neoplasms during exploratory laparotomy.

A study from tertiary oncology centre of 210 patients revealed that frozen section report had a sensitivity of 100%, 93.5%, and 45.5% for benign, malignant, and borderline tumours, respectively. The corresponding specificities were 93.2%, 98.3%, and 98.5%, respectively. For FNAC. The overall accuracy of frozen section diagnosis was 91.2%. Disagreement was mostly in the mucinous and borderline tumours [4].

Blood tests are done to look other organ function tests (Kidney, Liver, Hear, Lungs etc) that help determine the overall health and fitness for surgery and chemotherapy. Blood for tumour markers that indicate ovarian cancer like CA -125 which detect a protein that's often found on the surface of ovarian cancer cells may be advised. These tests provide clues to diagnosis and prognosis.

Genetic Testing

Some clinicians recommend testing a blood sample to look for gene changes that increase the risk of ovarian cancer. Knowing if a patient has an inherited change in the DNA helps to make decisions about the treatment plan.

Ovarian Cancer Stages

Once it's confirmed that the patient has ovarian cancer, the information from the tests is used to assign the cancer a stage. The stages of ovarian cancer range from 1 to 4, which are often indicated with Roman numerals I to IV. The lowest stage indicates that the cancer is confined to the ovaries. By stage 4, the cancer has spread to distant areas of the body. Following staging is a standard way of categorizing cancers that is used to determine prognosis and treatment:

Stage I: Cancer is confined to one or both ovaries

Stage IA: Growth is limited to 1 ovary with no tumour on external surfaces

Stage IB: Growth is limited to both ovaries with no tumour on external surfaces

Stage IC: Tumour is either stage IA or IB, but with tumour on surface of one or both ovaries

Stage II: Cancer has spread to the uterus or other nearby organs

Stage IIA: Extension and/or metastases of cancer to the uterus and/or fallopian tubes

Stage IIB: Extension of the cancer to other pelvic tissues

Stage IIC: Tumour is at either stage IIA or IIB, & tumour on surface of one or both ovaries

Stage III: Cancer has spread to the lymph nodes or abdominal lining

Stage IIIA: Tumour limited to the true pelvis

Stage IIIB: Metastasis of abdominal peritoneal surfaces ≤ 2 cm. in diameter

Stage IIIC: Peritoneal metastasis beyond the pelvis > 2 cm. in diameter

Stage IV: Cancer has spread to distant organs, such as the lungs or liver

Complications of OC

Ovarian cancer itself, particularly advanced stages, can lead to various complications, of ascites and anaemia, Occult blood in stools, hypotnesion etc.

Pleural Effusion Syndrome

The symptoms of pleural effusion syndrome vary greatly depending on where in the body fluid buildup has occurred. Common reported symptoms include Difficulty breathing as was reported in our case after 5 months of surgery and 2 rounds of chemotherapy and clearance given by the team. This is because fluid builds up around patients' lungs, causing shortness of breath, Abdominal pain / discomfort resulting from pressure on internal organs from building up liquids as well as, changes in appetite due to the strain being put on vital organs like digestive systems because of the presence of liquid. Once diagnosed with Plural Effusion Syndrome, doctors' treatment in India involves draining the malignant pleural fluid and chemotherapy to prevent the outflow from returning as was done in our case too. In some cases, surgical debulking may be necessary to achieve optimal results. In addition to draining the malignant pleural fluid, mitoxantrone pleurodesis and systemic chemotherapy is given. Mitoxantrone is an effective treatment that does not cause significant local or systemic toxicity.

GI Involvement

Gastric metastasis from ovarian cancer is unusual, either as synchronous with the primary tumour or appearing several years after its initial diagnosis. GI involvement from ovarian cancer is limited to the seromuscular layer of the small and large bowels but it also metastasizes through the lymphatic and hematogenous route, with a frequency ranging from 0.7% to 1.8%. The stomach is highly vascularized; therefore the dissemination of ovarian

carcinoma is possible but rare. The diagnosis is challenging because of its low incidence. Clinical manifestations include epigastric pain, nausea, vomiting, anaemia, melena or occult GI blood loss as was reported in our case.

Hypotension in OC Patients:

- Complications, of ascites and anaemia, contribute to hypotension.
- Some chemotherapy drugs used to treat ovarian cancer can negatively impact the cardiovascular system, leading to hypotension
- Cancer treatments involving cytokines can lead to hypotension due to the stimulation of nitric oxide production, a potent vasodilator
- Occasionally cancer patients, in advanced stage, experience autonomic dysfunction, which can manifest as postural hypotension
- Simple dehydration following nausea, vomiting, and reduced appetite, common side effects of cancer and its treatment, also cause hypotension
- Low magnesium levels, occur in patients with advanced ovarian cancer undergoing chemotherapy, also contribute to hypotension
- Significant blood loss or fluid depletion during surgery for ovarian cancer can also cause hypotension.

Case Management

The Primary Tumour Treatment Involves Surgery and Chemotherapy

Surgery

For early-stage cancer that hasn't spread beyond one ovary, surgery may involve removing the affected ovary and its fallopian tube. This procedure may preserve the ability to have children. If cancer is present in both ovaries, but there are no signs of additional cancer, surgeon may remove both ovaries and both fallopian tubes. This procedure leaves the uterus intact, so patient may still be able to become pregnant using own frozen embryos or eggs or with eggs from a donor. Sometimes the doctor can't be certain of the diagnosis until surgery to remove an ovary and have it tested for signs of cancer [5, 6].

If the cancer is more extensive, surgery to remove both ovaries and the uterus is opted. If the patient doesn't wish to preserve the ability to have children, surgeon will remove the ovaries, the fallopian tubes, the uterus, nearby lymph nodes and a fold of fatty abdominal tissue called Omentum. The surgery costs about INR 300,000 in India. If the cancer is advanced, surgery involves removing as much of the cancer tissue as possible and chemotherapy before or after surgery [5-7].

Chemotherapy

Chemotherapy is a drug treatment that uses chemicals to kill fast-growing cells in the body, including cancer cells. Chemotherapy drugs can be injected into a vein or taken by mouth, often used after surgery to kill any cancer cells that might remain. It can also be used before surgery. Chemotherapy drugs may be heated and infused into the abdomen during surgery (hyperthermic intraperitoneal chemotherapy), left in place for some time before they're drained and then the operation is completed. The Ovarian Cancer Chemotherapy Costs in India approx. Rs. 100,000-300,000 [7].

Radiotherapy

Radiation therapy may be used alongside surgery or chemotherapy to target cancer cells and shrink tumours. Radiation therapy for ovarian cancer in India typically costs between INR 1,00,000 to INR 3,00,000. The total expense depends on factors such as the number of sessions required, and the type of radiation technology employed [7].

Targeted Therapy

Targeted drug treatments focus on specific weaknesses present within cancer cells and cause those cancer cells only to die.

Hormone Therapy

Hormone therapy uses drugs to block the effects of the hormone oestrogen on ovarian cancer cells, as some ovarian cancer cells use oestrogen to help them grow. Hormone therapy is a treatment option for some types of slow-growing ovarian cancers and for the recurrent cancer.

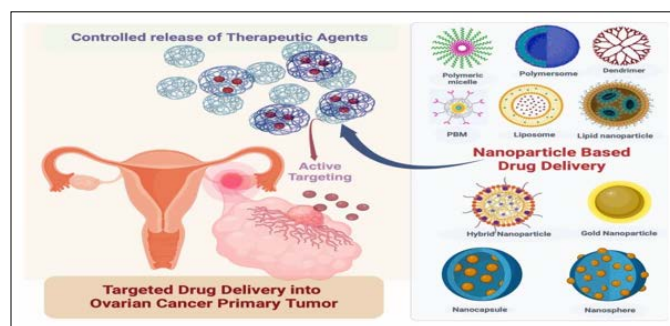
Immunotherapy

Immunotherapy uses the immune system to fight cancer, when the body's disease-fighting immune system fails to attack cancer cells because they produce proteins that help them hide from the immune system cells. Immunotherapy works by interfering with that process.

Nano-Therapy

By enhancing drug delivery, reducing toxicity, and enabling precision medicine, nanotechnology holds the potential to significantly improve outcomes for ovarian cancer patients. Nanotechnology involves the design and manipulation of materials at the nanoscale, typically between 1 and 100 nm.

Recently, nanomedicine-based photodynamic therapy has gained attention to enhance targeted PDT (TPDT) by specifically targeting epithelial and vascular growth factors. Over-expression of EGFR in ovarian cancer has been linked to poor prognosis and has been shown to correlate with worse survival outcomes in women with advanced ovarian cancer who have undergone surgery and combination chemo-immunotherapy [5].



The precision of nanomedicine's ability to target specific areas and controlled light exposure reduces the overall toxicity associated with traditional PDT in ovarian cancer. Nanotechnology-based drug delivery methods offer significant advantages compared to traditional treatments. Highly effective nanoparticle therapeutic outcomes in cancer immunotherapy could accelerate the translation of engineered nano-immuno-therapeutics into cancer management clinics [8].

Supportive (Palliative) Care

Palliative care is specialized medical care that focuses on providing relief from pain and other symptoms of a serious illness. Palliative care specialists work with you, your family and your other doctors to provide an extra layer of support that complements your ongoing care. Palliative care can be used while undergoing other aggressive treatments, such as surgery and chemotherapy.

Palliative Care

Palliative care is provided by a team of doctors, nurses and other specially trained professionals to improve the quality of life for people with cancer and their families, along with curative or other treatments to make them feel better and live longer.

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